Release notes for ENDF/B Development n-048_Cd_116 evaluation

April 26, 2017

- `psyche` Warnings:

  1. Gamma width not in agreement with PSYCHE's expectations
     FILE 2 / SECTION 151 / ISOTOPE MASS = 116. L = 0 / AT RESONANCE ENERGY 1.38454E+03 EV. THE GAMMA WIDTH 2.15000E-01 DEVIATES TOO MUCH FROM THE AVERAGE 6.55964E-02 (0): Gamma width

     ```
     FILE  2
        SECTION 151
             ISOTOPE MASS = 116. L =  0
                      AT RESONANCE ENERGY  1.38454E+03 EV. THE GAMMA WIDTH  2.15000E-01 DEVIATES TOO MUCH FROM THE AV
     ```

  2. Non-threshold reaction with Q value differing from PSYCHE's expectations
     FILE 3 / SECTION 107 / THE CALCULATED Q 3.83897E+05 DISSAGREES WITH THE GIVEN Q 5.72900E+05 (0): Iffy Q

     ```
     FILE  3
        SECTION 107
                THE CALCULATED Q  3.83897E+05 DISSAGREES WITH THE GIVEN Q  5.72900E+05
     ```

- `recent` Warnings:

  1. Statistical weight of certain L values were incorrect
     0: RRR goof (a)

     ```
      Calculate Cross Sections from Resonance Parameters (RECENT 2015-1)
      ================================================================================
      Retrieval Criteria-----------        MAT
      File 2 Mimimum Cross Section- 1.0000E-10 (Standard Option)
      Reactions with No Background-     Output (Resonance Contribution)
     ... [324 more lines]
     ```

- `groupie` Errors:

  1. Very small elastic cross section found
     0: Small elastic

     ```
      Multi-Group and Multi-Band Parameters from ENDF/B Data (GROUPIE 2015-2)
      --------------------------------------------------------------------------------
      ENDF/B Input and Output Data Filenames
      ENDFB.IN
      ENDFB.OUT
     ... [97 more lines]
     ```

- `fudge-4.0` Errors:

  1. Calculated and tabulated Q values disagree.
     reaction label 8: n[multiplicity:'2'] + Cd115 (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -8773818.785324097 eV vs -8.697e6 eV!
     ```

  2. Calculated and tabulated Q values disagree.
     reaction label 9: n[multiplicity:'3'] + Cd114 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -14914680.93847656 eV vs -1.4842e7 eV!
```

3. Calculated and tabulated Q values disagree.
   reaction label 11: n + H2 + Ag114 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -16979906.04963684 eV vs -1.6696e7 eV!
```

4. Calculated and tabulated Q values disagree.
   reaction label 12: n + H3 + Ag113 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -16710121.91862488 eV vs -1.6625e7 eV!
```

5. Calculated and tabulated Q values disagree.
   reaction label 13: Cd117 + gamma (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 5703631.67199707 eV vs 5.765e6 eV!
```

6. Calculated and tabulated Q values disagree.
   reaction label 14: n + He4 + Pd112 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -4881503.292831421 eV vs -4.8175e6 eV!
```

7. Calculated and tabulated Q values disagree.
   reaction label 15: H1 + Ag116_s (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -5442949.387893677 eV vs -5.316e6 eV!
```

8. Calculated and tabulated Q values disagree.
   reaction label 17: H3 + Ag114_s (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -10722673.10902405 eV vs -1.0438e7 eV!
```

9. Calculated and tabulated Q values disagree.
   reaction label 18: He3 + Pd114_s (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -12156219.59779358 eV vs -1.1233e7 eV!
```

10. Calculated and tabulated Q values disagree.
    reaction label 19: He4 + Pd113_s (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 545442.2613372803 eV vs 5.729e5 eV!
```

- `njoy2012` Warnings:

1. Message comes from several resonance types that do not support the calculation of angular distributions. Some of them can be used if `Want_SAMRL_RM or Want_SAMRML_BW are true.`
   reconr...reconstruct pointwise cross sections in pendf format (0): RECONR/calculation of angular distribution not installed (0)

```
 ---message from rdf2bw---calculation of angular distribution not installed.
   samm max legendre order:  0
```

2. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (0): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 16
                          only mf4/mf5 provided
```

3. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (1): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 17
                          only mf4/mf5 provided
```

4. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (2): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 22
                          only mf4/mf5 provided
```

5. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (3): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 28
                          only mf4/mf5 provided
```

6. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (4): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 32
                          only mf4/mf5 provided
```

7. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (5): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 33
                          only mf4/mf5 provided
```

8. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
groupr...compute self-shielded group-averaged cross-sections (6): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 91
                          only mf4/mf5 provided
```